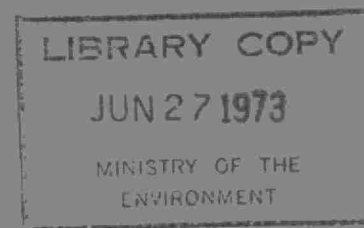


OPERATING SUMMARY

TIMMINS



MINISTRY OF THE ENVIRONMENT

1972

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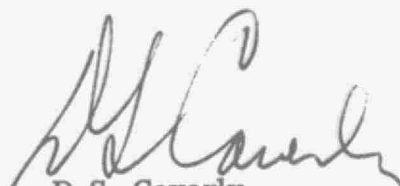
Ministry of the
Environment

135 St. Clair Avenue West
Toronto 195, Ontario


We are pleased to present you with the 1972 operating summary for the water pollution control plant serving your community.

This summary contains data on the performance of the plant as well as relevant financial information. Of particular interest is the review of the year's activities in which significant items of these data are discussed in some detail by the operations engineer and his staff who, by their day-to-day involvement with the operation, are thoroughly familiar with the plant.

We appreciate your continuing interest in protecting the environment through the efficient operation of this wastewater treatment facility.



D.S. Caverly,
Assistant Deputy Minister.



D.A. McTavish, P. Eng.,
Director,
Project Operations Branch.

MINISTRY OF THE ENVIRONMENT

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REGIONAL SUPERVISOR
P. J. Osmond

OPERATIONS ENGINEER
J. Wesno

135 St. Clair Avenue West
Toronto 195

TIMMINS
WATER POLLUTION CONTROL PLANT

operated for

THE TOWN OF TIMMINS

by the

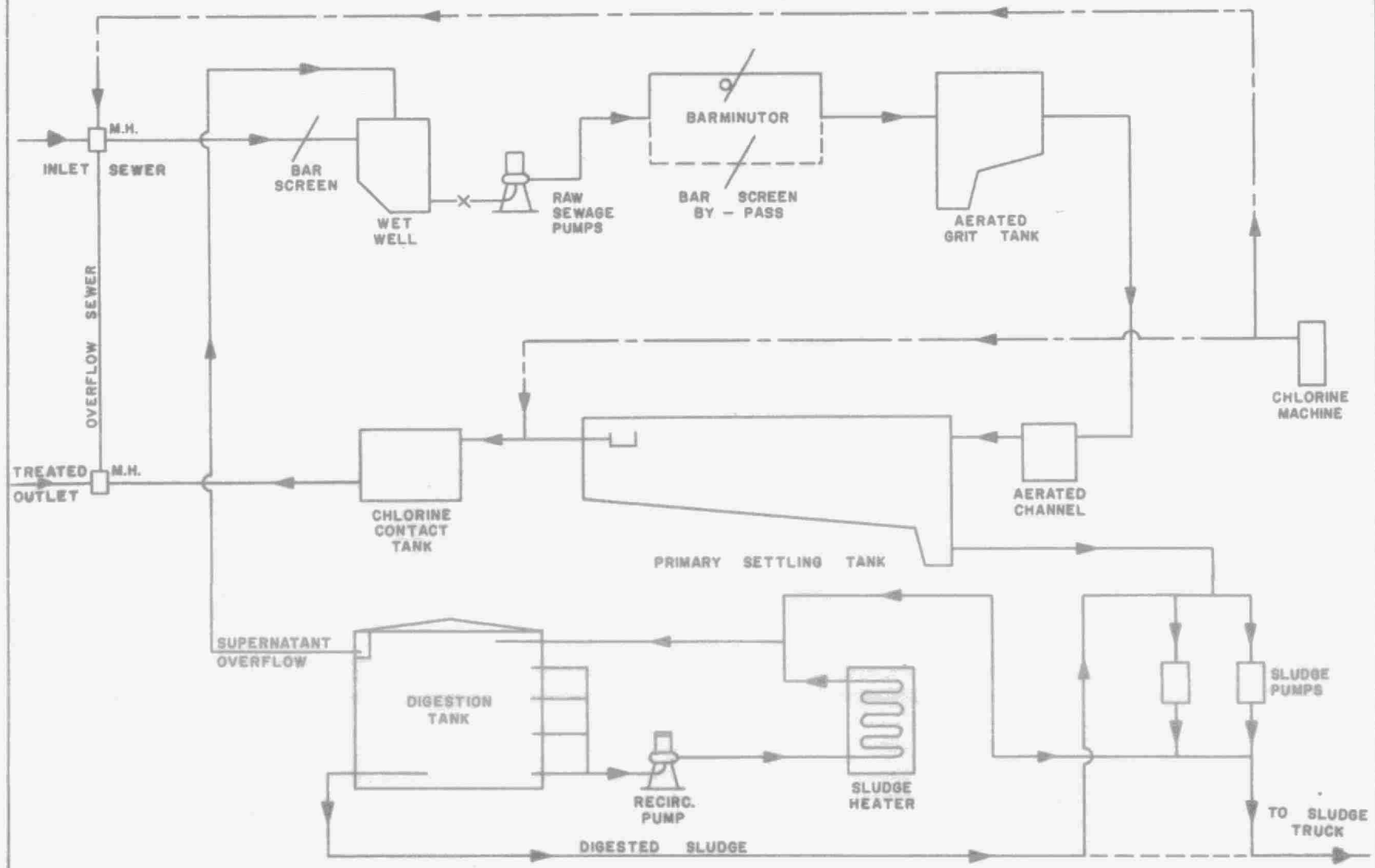
MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

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TIMMINS WPCP



DESIGN DATA

PROJECT NO. 2-0071-60

TREATMENT Primary

DESIGN FLOW 3.0 mgd

DESIGN POPULATION 30,000

BOD - Raw Sewage 180 mg/l
- Removal 35-40%

SS - Raw Sewage 200 mg/l
- Removal 60-65%

RAW SEWAGE PUMPS

Screening

Type: Manually Cleaned
Size: 2" opening

Pumps

Type: Worthington
Size: One 3650 gpm @ 26' tdh
One 3120 gpm @ 26' tdh
One 3120 gpm @ 26' tdh (diesel)

PRIMARY TREATMENT

Comminution

Type: Chicago Pump Barminutor
Size: One Model C (36")

Grit Removal

Type: Aerated
Size: One 13' x 18 3/4' x 12 1/2'
(19,000 gal)
Retention: 9.1 min
Air Supply: Two Sutorbilt

Primary Sedimentation

Type: Jeffrey
Size: Two 125' x 20' x 12' (avg)
(374,000 gal)
Retention: 3.0 hr
Loading: Surface, 600 gal/ft²/day
Weir, 9900 gal/ft/day

CHLORINATION

Type: F & P
Size: One 200 lb/day

Chlorine Contact Chamber

Size: Two 47 1/2' x 7' x 9'7"
(37,400 gal)
Retention: 19 min

OUTFALL

To Mattagami River

SLUDGE HANDLING

Digestion System - single-stage,
concrete
Type: PFT (gas mixed)
Size: One 65' dia x 24' swd (80,000
cu ft or 0.50 mil gal)
Loading: 1.35 lb/cu ft/mo

'72 Review

GENERAL

The Timmins plant is a 4.0 million gallon per day primary treatment plant, consisting of grit removal, coarse screening, sedimentation and chlorination facilities. The plant is staffed by a chief operator and two operators.

During the year terms of reference to expand the plant were prepared outlining various alternatives and stagings. A consulting engineer is to be engaged in 1973 to prepare a design report.

Improved sludge digestion during the past year due to good gas mixing and operation resulted in approximately 33 percent less sludge production from the various year and reduced sludge haulage costs.

Handrails around the clarifiers were installed and a combustible gas sniffer was acquired for plant safety. A tractor complete with rotary mower and snow thrower was purchased during the year.

Major repairs were carried out on both clarifiers, i. e., new shoes on flights, etc.

During the year several breakdowns of the furnace occurred which were due to the incompatibility of the digester gas operation with fuel oil. A conversion from fuel oil to natural gas as the main plant fuel is being seriously considered for 1973 to overcome the breakdown problems.

EXPENDITURES

The operating cost for the year was \$81,849.41, an increase of 21.7 percent over 1971. A large portion of this increase was due to payroll and fuel. Other areas of increased costs were chemicals and equipment. Sludge haulage costs decreased considerably during the year.

PLANT FLOWS AND CHLORINATION

The average daily flow for the year was 3.9 mgd which was 97.5 percent of the nominal design capacity of 4.0 mgd. The average daily flow increased by 0.30 million gallons over 1971.

Metering problems were encountered for two months, thus the flow figures for January and May are estimates only.

The daily design flow of 4.0 mgd was exceeded 36 percent of the time. The wet weather design capacity of 9.0 mgd was exceeded once during the month of June (9.1 mgd).

A total of 62,000 pounds of chlorine at an average dosage of 4.4 mg/l was required to provide a residual of 0.5 mg/l in the effluent.

PLANT EFFICIENCY

The average raw sewage BOD and suspended solids concentrations were 119 mg/l and 172 mg/l respectively. The raw sewage BOD was 26 percent less than 1971 and the suspended solids, 6 percent less.

The average BOD and suspended solids reductions were 38 percent and 56 percent respectively. This still represents satisfactory treatment for a primary plant although the suspended solids removal was slightly less than the design criteria of 60 - 65 percent.

A total of 403.5 tons of BOD and 912 tons of suspended solids was removed during the year. The final effluent concentrations were 74 mg/l BOD and 75 mg/l suspended solids and were respectively 12 percent and 25 percent greater than the previous year.

A total of 11,635 cubic feet of grit was removed from the raw sewage. This represents an average of 8.1 cubic feet of grit per million gallons of sewage and is considered abnormally high.

Twenty-four hour composite sampling on a bi-weekly basis was initiated in 1972 and is a definite factor in the differing raw sewage and effluent BOD and suspended solids strengths from the previous years.

SLUDGE DIGESTION AND DISPOSAL

A total of 11,220,000 gallons of raw sludge was pumped to the digester. The raw sludge averaged 3.5 percent total solids, 71 percent of which was volatile matter. The digested sludge averaged 4.8 percent total solids of which 57 percent was volatile.

A total of 2.1 mg of digested sludge was hauled from the digester by tank truck. This is down from the 1971 figure of 3 million gallons.

CONCLUSIONS

Average daily flows increased by 88 percent over the previous year to 3.9 mg.

It is anticipated that a consulting engineer will be engaged in 1973 to report on expansion of the existing works.

Better sludge digestion during the year resulted in a 33 percent reduction in sludge haulage and is attributed to the gas mixing equipment installed in 1971.

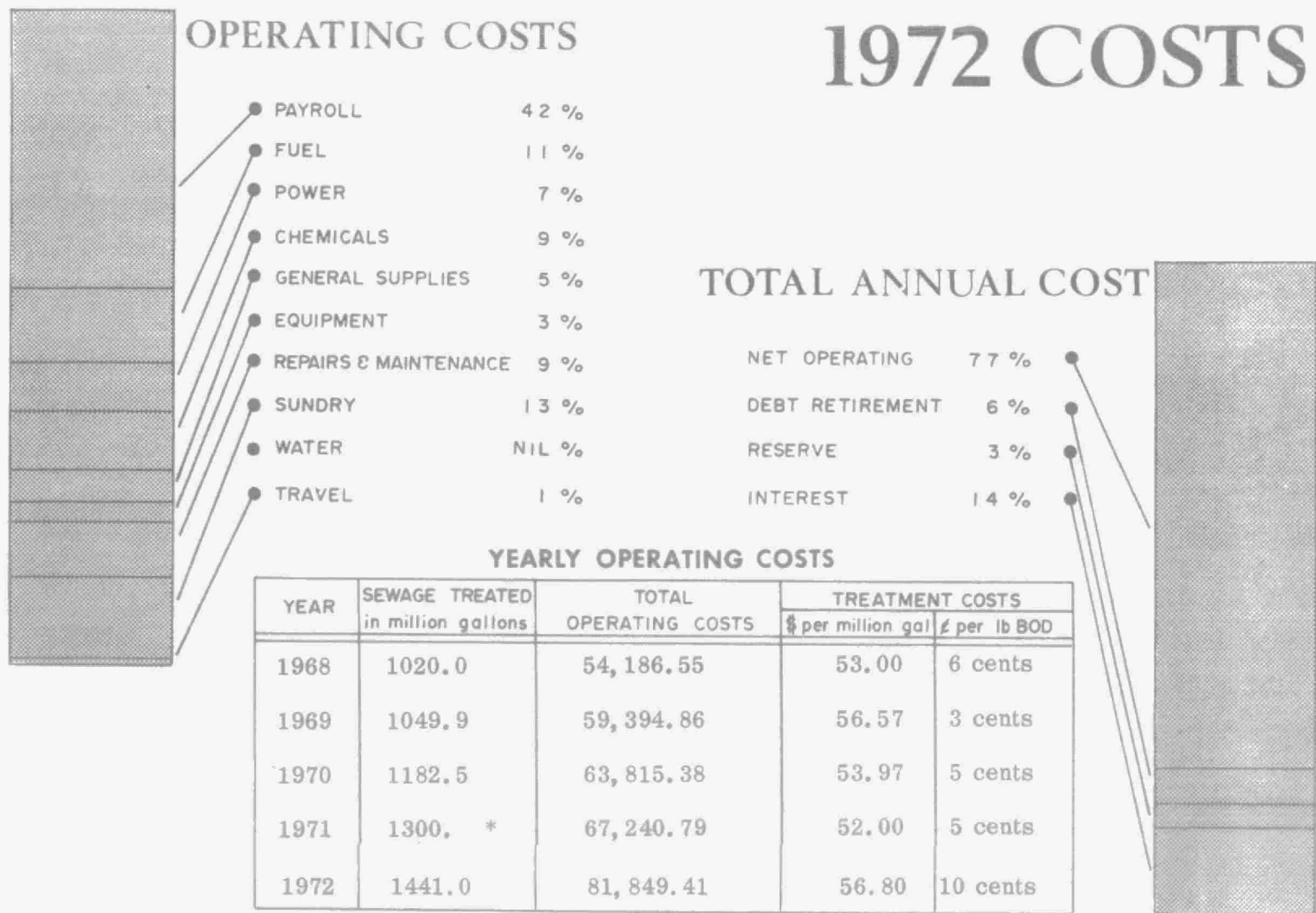
The high grit load experienced at the plant is indicative of either a combined sewer system in which abnormal amounts of storm water are collected and directed to the treatment plant or a sewer system in poor repair. In our opinion the first possibility is more likely. If storm water was not included in the plant flows it is likely that plant expansion could be forestalled by a few years.

PROJECT COSTS

NET CAPITAL COST	\$785, 370. 12
DEDUCT - Portion financed by CMHC	<u>(521, 108. 36)</u>
Long Term Debt to MOE	<u>\$264, 261. 76</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	\$ <u>92, 267. 42</u>
Net Operating	\$ 81, 849. 41
Debt Retirement	6, 566. 00
Reserve	3, 614. 17
Interest Charged	<u>14, 819. 52</u>
TOTAL	<u>\$106, 849. 10</u>

RESERVE ACCOUNT

Balance @ January 1, 1972	\$ 25, 025. 33
Deposited by Municipality	3, 614. 17
Interest Earned	<u>1, 654. 91</u>
	\$ 30, 294. 41
Less Expenditures	<u>956. 82</u>
Balance @ December 31, 1972	\$ <u>29, 337. 59</u>



* estimate

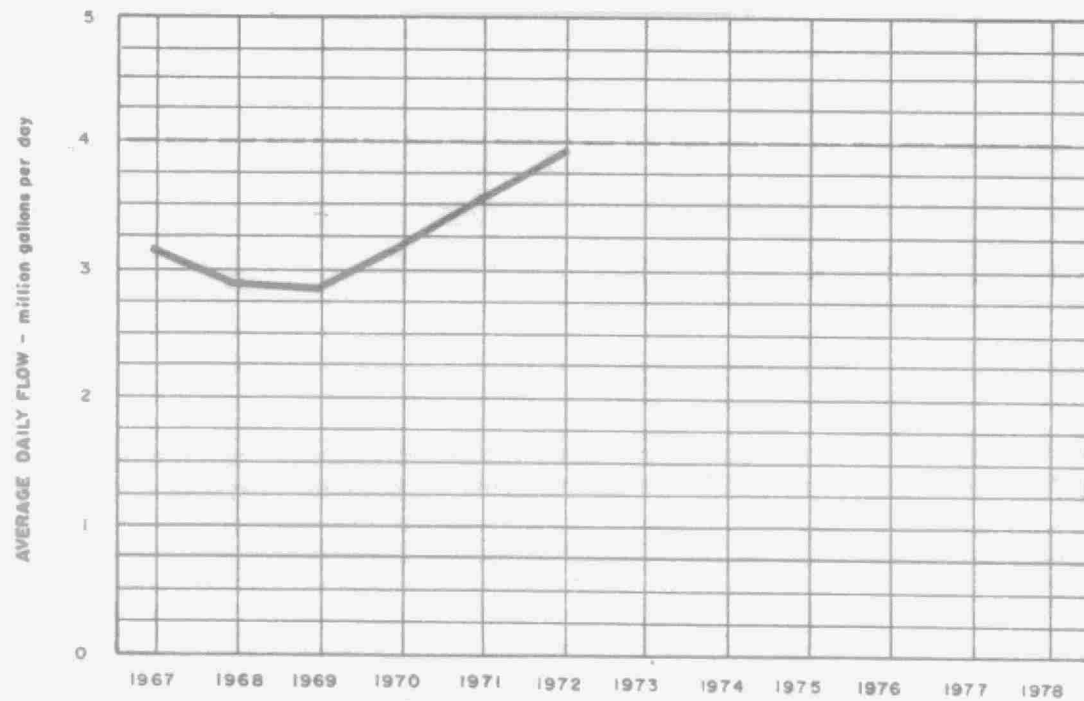
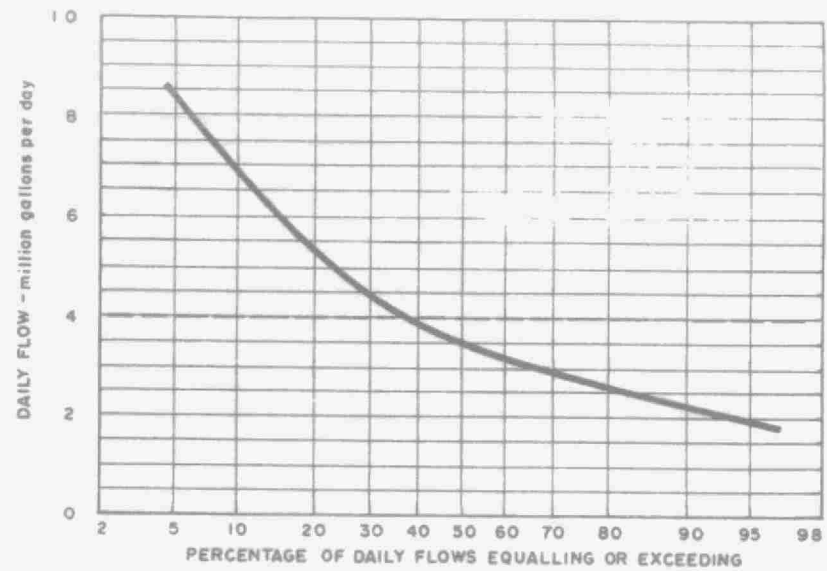
MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY*	WATER	TRAVEL
JAN	4336.77	2182.87		187.20	470.38	1278.00			158.42	59.90		
FEB	6529.02	2123.23		986.28	492.78	1358.00	348.46	13.25	99.13	1089.97		17.92
MAR	4738.80	1985.48		310.75	411.18		215.66	33.80	660.93	1103.24		17.76
APR	7262.35	2358.99		1456.31	393.18	1358.00	425.64	56.92	135.67	1051.08		26.56
MAY	6678.02	2793.08	65.05	408.72	434.78		96.01	1456.66	450.55	932.53		40.64
JUNE	6952.79	3253.00	157.46	729.88	502.38		256.94	31.93	786.97	1113.05		121.18
JULY	4615.55	55.40		251.68	438.78	824.60	402.88	800.00	980.65	820.12		41.44
AUG	4530.49	2214.95	706.89	303.47			271.56		969.36	(2.06)		12.32
SEPT	8753.16	2196.33	635.58	124.80	889.91	1254.60	399.00		1605.06	1636.20		11.68
OCT	4721.58	2601.54	582.40	121.10	416.68		44.36		272.80	682.70		
NOV	2392.89	115.41		673.62			353.39		108.67	1141.80		
DEC	20337.99	8330.96	1880.12	3270.06	902.56	1509.20	1658.08	392.41	1234.26	829.07		331.27
TOTAL	81849.41	30211.24	4081.50	8823.87	5352.61	7582.40	4471.98	2784.97	7462.47	10457.60		620.77

Brackets indicate credit.

* Sundry includes sludge haulage costs of \$9,004.94

PROCESS DATA FLOWS



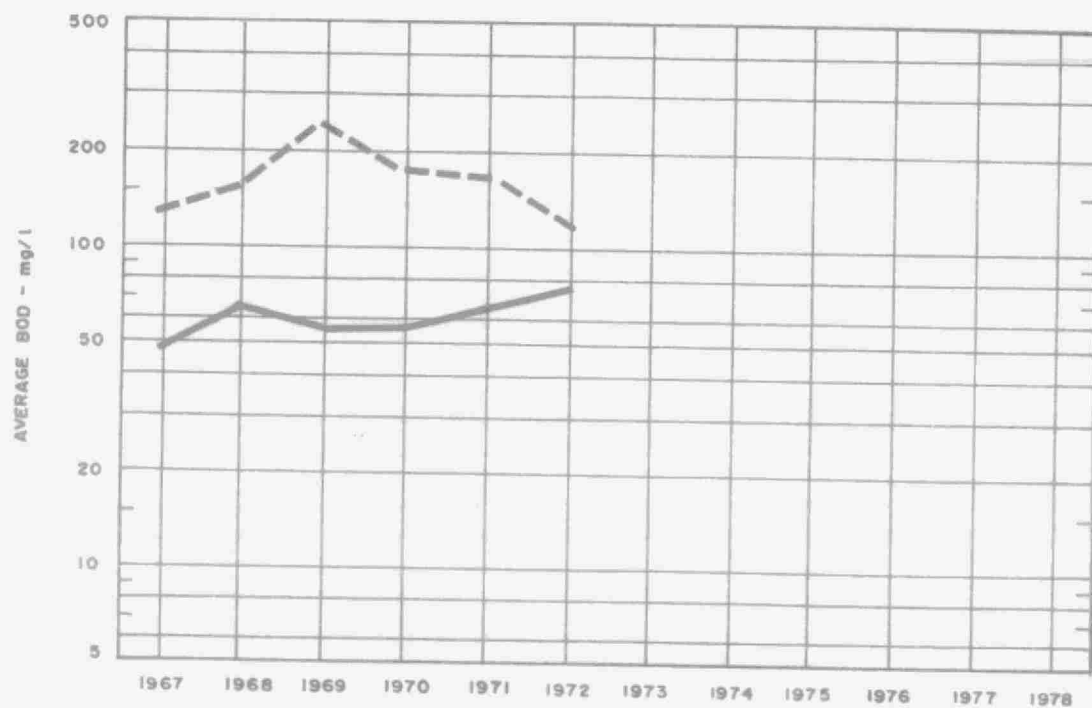
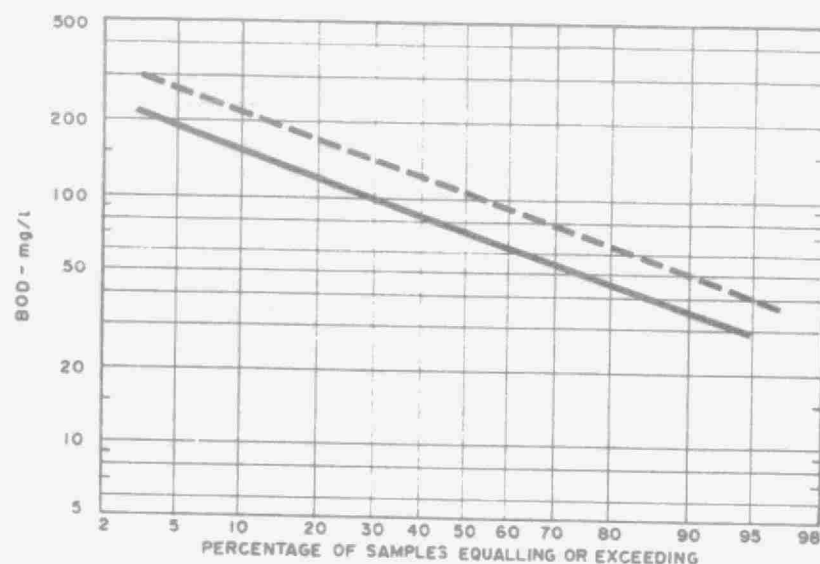
DESIGN CAPACITY — — — — —

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 ³ pounds	mg/l	mg/l	%	10 ³ pounds	mg/l P	mg/l P
JAN	75. *	2.4	4.4	155	105	32	38	155	43	72	84	9.3	5.5
FEB	112	3.9	6.7	177	101	43	85	170	83	51	97	9.3	5.6
MAR	97	3.1	4.8	220	113	49	103	205	53	74	147	13.0	5.3
APR	166	5.5	8.3	150	90	40	99	390	50	87	564	7.7	4.2
MAY	220 *	7.1	8.4	108	63	42	99	143	53	63	200	7.2	4.1
JUNE	181	6.0	9.1	85	75	12	18	178	83	53	172	5.4	5.3
JULY	94	3.0	5.4	87	57	34	28	151	66	56	80	6.0	4.6
AUG	108	3.5	5.0	131	63	52	74	175	73	58	111	7.3	6.2
SEPT	113	3.8	4.9	155	73	53	93	220	70	68	170	11.0	6.0
OCT	107	3.4	4.0	130	70	46	64	162	115	29	50	12.0	5.5
NOV	88	2.9	4.0	105	39	63	58	152	61	60	80	7.8	4.0
DEC	80	2.6	5.1	160	100	38	48	171	83	51	70	9.0	6.3
TOTAL	1441 *	-	-	-	-	-	807	-	-	-	1825	-	-
AVG.	-	3.9	MAXIMUM 9.1	119	74	38	67	172	75	56	152	7.1	5.5
No. of Samples	-	-	-	56	36	-	-	135	115	-	-	54	32

* - Estimated

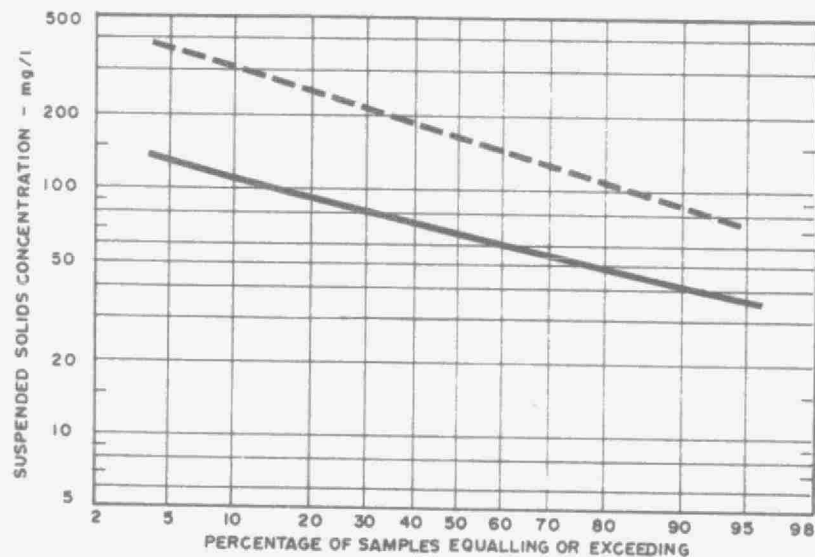
BIOCHEMICAL OXYGEN DEMAND



PLANT INFLUENT - - - - -

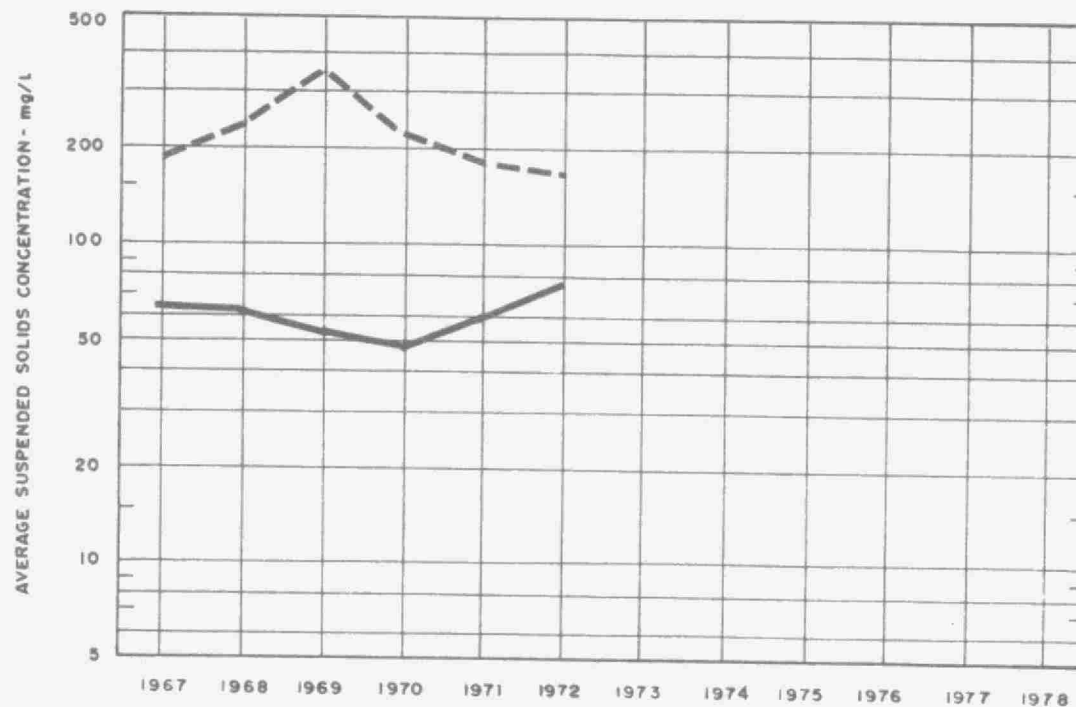
PLANT EFFLUENT —————

SUSPENDED SOLIDS

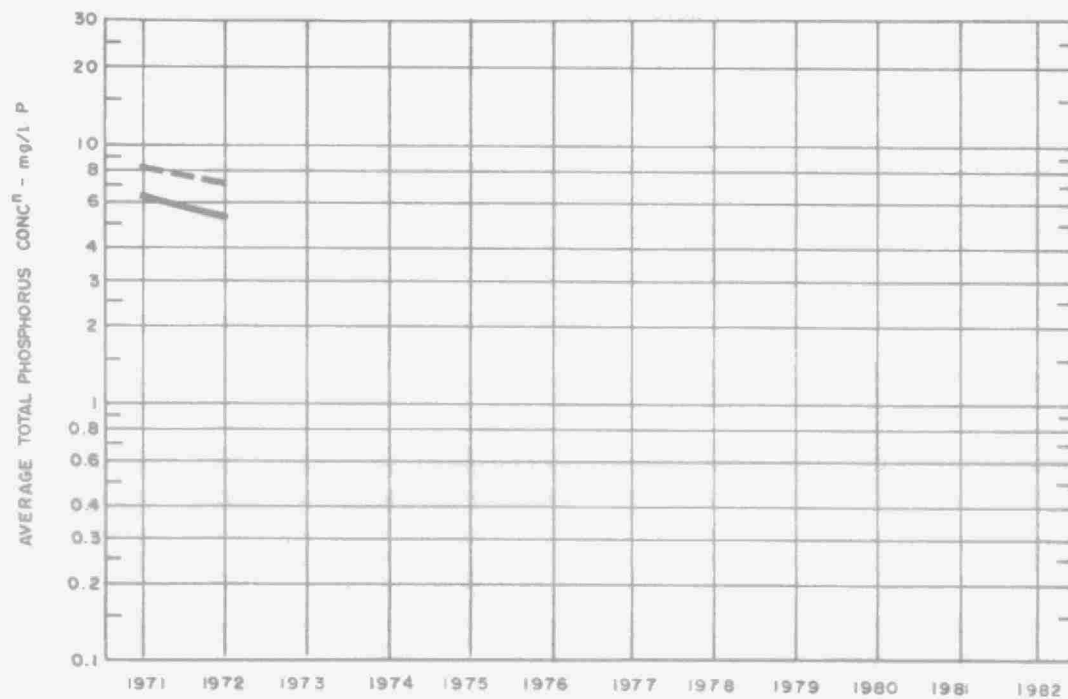
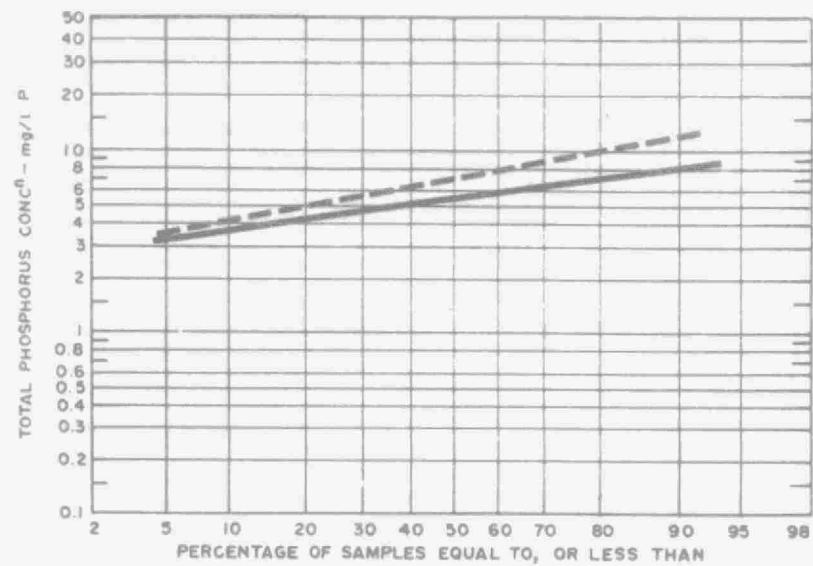


PLANT INFLUENT

PLANT EFFLUENT



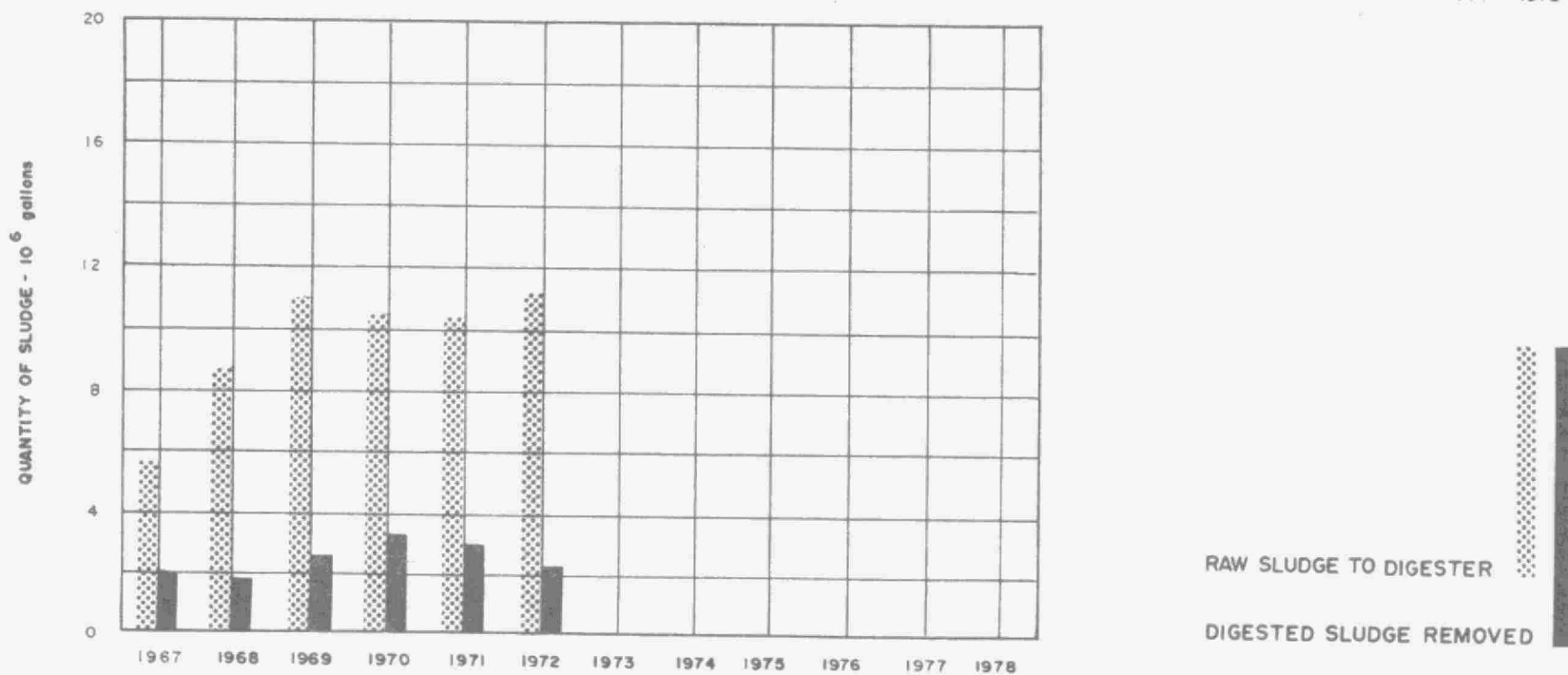
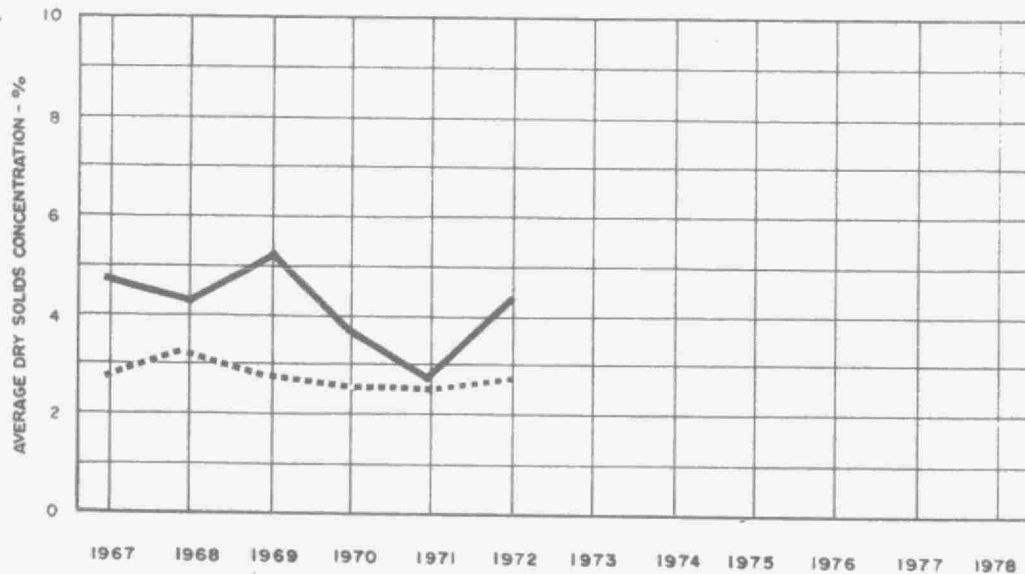
PHOSPHORUS



PLANT INFLUENT -----
PLANT EFFLUENT —————

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED ———

TREATMENT DATA

MONTH	GRIT QUANTITY REMOVED cubic feet	CHLORINATION		SLUDGE DIGESTION and DISPOSAL							
		CHLORINE USED 10 ³ pounds	AVERAGE DOSAGE mg/l	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT	SLUDGE HAULED cubic yards
				QUANTITY 10 ⁵ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	QUANTITY REMOVED 10 ⁵ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	TOTAL SOLIDS %	
JAN	1560	5.2	6.9	9.0	1.9	84	2.4	3.8	64	.8	1429
FEB	1440	5.2	4.7	8.4	1.6	83	2.6	3.4	66	.1	1541
MAR	1380	4.8	5.0	8.9	1.8	85	2.4	2.1	68	.2	1429
APR	1140	5.1	3.1	8.6	2.6	77	2.1	3.9	59	.1	1260
MAY	930	4.5	2.6	6.9	3.3	56	2.6	7.7	49	.1	1506
JUNE	930	5.4	3.0	7.0	5.4	62	1.8	4.8	51	.2	1051
JULY	660	5.8	6.2	8.4	5.4	66	2.1	6.8	52	.2	1259
AUG	780	5.8	5.4	7.9	4.1	59	1.5	6.4	56	.2	889
SEPT	750	5.0	4.4	8.2	4.8	76	.4	5.4	61	.2	236
OCT	810	5.8	5.4	14.3	4.0	69	1.2	5.2	55	.1	706
NOV	720	5.0	5.7	12.1	3.5	68	1.6	4.7	58	.1	956
DEC	535	4.4	5.5	12.5	3.2	70	.7	3.4	56	.2	445
TOTAL	11635	62.0	—	112.2	—	—	21.4	—	—	—	12708
AVG.	8.1 cubic feet/mil gal	5.2	4.4	9.4	3.5	71	1.8	4.8	57	.2	1059

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